ISU Summer Days in Angers, FRANCE

Figure 1: Planting in Jardin des plantes d'Angers

Figure 2: Château d'Angers

Figure 3: Town Hall of Angers

Figure 4: *Hibiscus moscheutos*

Figure 5: Author at Château de Chaumont-sur-Loire

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11-15 August 2024

(All images from the author, Eva Erhart unless otherwise credited)

(Background picture: *Scabiosa columbaria* subsp. *ochroleuca*)

Contents

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Figure 6: ISU members on the ISU Summer Days 2024 at Jardin des plantes d'Angers (ISU/Banse, 2024)

Introduction

My love of nature and passion for sustainability led me to study horticulture and environmental sciences in higher education. Since graduating as a horticultural engineer (MSc) in Hungary, I have worked with plants; in garden centres, garden/park maintenance jobs, at the Royal Horticultural Society and in commercial nurseries in the UK and Europe. I've always enjoyed travelling and the ISU Summer Days was a great opportunity for me to make new connections in the horticultural industry and see the eco-friendly practices used in France.

I am the Plant Breeder at Walberton Nursery, working on new product development, constantly looking to better understand plants, searching for new novel varieties and interesting species to include in our inhouse breeding programme. My aim is to introduce exciting new plants to the UK market and beyond. Good knowledge of a wide range of plant Genera is crucial to my job. I learnt a lot from visiting large commercial nurseries in France. I found it particularly interesting to see how French growers incorporate eco-friendly practises including the sustainable use of resources such as water, recycling and how they are dealing with the problems caused by climate change such as drought, novel pests and diseases. Seeing plants endemic to this region of France in their urban green spaces. Many of these species may well suit the UK climate as it warms. Traits like drought tolerance and disease resistance are becoming increasingly important as we select and breed plants that will thrive in UK gardens over the next few decades. Perhaps most importantly the Summer Days in France helped me meet and learn from other horticulturalists, plant breeders and create contacts with which I can share ideas and knowledge.

Project Overview

The ISU Summer Days was held in France, Angers between 11-15 August, arranged by the Internationally Hardy Plant Union, which I attended with my colleague Martin Emmet (Director of Business Development at Farplants Group).

The summer days included: large commercial nursery, vineyard, University and botanical garden visits while networking with other ISU members, all of whom are horticultural professionals.

Aims and Objectives

- Meet other participating horticultural professionals and make contacts to facilitate future information sharing.
- Broaden my knowledge of commercial varieties on the French market.
- Visit French ornamental production systems, horticultural establishments and green spaces, taking new, more effective and sustainable ideas back to my own company.
- Look at a range of plant genera growing in urban green spaces and their natural habitat and identify those that may work in the UK.
- Investigate the new challenges caused by climate change and their solutions for the future.
- Share my experiences to motivate the members of the company and other people to seek out these kinds of opportunities for self-development and information sharing.

Itinerary

SUNDAY 11.8.2024

Fly to Angers

MONDAY 12.8.2024

Green Areas of Angers City:

Pèpiniere Lepage 'Val de Loire'

Domaine des deux Moulins

TUESDAY 13.8.2024

INH University, Agrocampus-Ouest

Chaumont sur Loire; "The greatest Garden Show in France!"

WEDNESDAY 14.8.2024

Barrault Nursery

Plantagenet Plantes Nursery

Domaine de la Paleine Vineyard

Awarding the best perennial novelties with the ISU Award

FRIDAY 15.8.2024

Fly home

Report

Green areas of Angers city:

On the first day we visited some of Angers parks and green areas, including Town Hall of Angers (Figure 7), St Serge Church, Jardin des plantes d'Angers (Figure 1, 6, 9).

Figure 7: Town Hall of Angers

Figure 8: Grassy tram line

Figure 9: Hydrangea in Jardin des plantes d'Angers

Angers city is in the heart of the Loire Valley. Since 2000 a large section of the Loire Valley has been listed as a UNESCO World Heritage Site for outstanding beauty of its landscapes (*The Loire Valley between Sully-sur- Loire and Chalonnes*, 2024). Due to its great location and mild climate, the Angers area has a long history of horticultural production, it is well known in the plant sector and home to the Community Plant Variety Office. Additionally, Angers is renowned as one of France's greenest cities, further enhancing its charm and appeal.

Alice Evain, Head of Parks, Gardens and Landscapes Department and David Gordon, owner of Plantagenet Plantes welcomed and introduced us to Angers greening projects. They explained that Angers has been facing low precipitation, high evaporation rates and increasing periods of drought in recent years. Extended periods of drought have been a huge issue in the UK too, hence their solutions and plant selection could be suitable in the English climate too, especially in the Southeast where Walberton Nursery is based. To increase biodiversity, mitigate the effects of global warming, improve environmental conditions and therefore citizens' wellbeing, Angers city council is dedicated to maximising the green areas and minimising water usage.

In their presentation they explained how they have been achieving this, we then visited three locations as example.

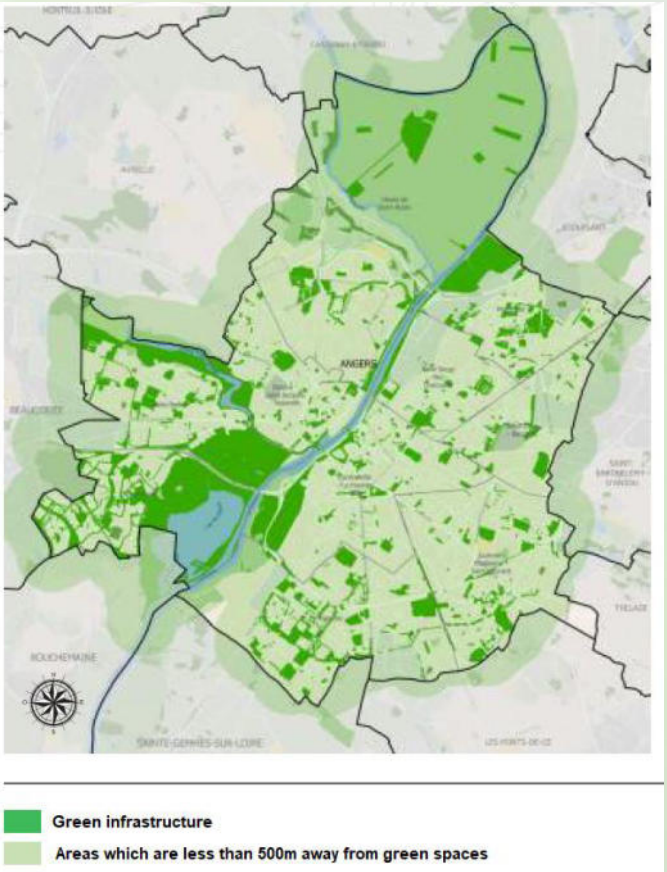

Figure 10: Green infrastructure map of Angers (*Shéma directeur des paysages 2019-2025*, 2019)

The City of Angers has an inspirational 44% (226ha) green areas. This includes circa 100 parks and gardens and 103ha of green areas alongside the road network. All residents of Angers live within 500m of a green space (Figure 10) (Evain, 2024).

The city council is responsible for:

- planning, executing and monitoring urban regreening projects
- landscape maintenance
- plant production.

Angers's plant supply

In the new/redeveloped flowerbeds, perennials are preferred to annual plants for their resistance and lower water requirements since 2017. Angers's total annual budget for plants is around 130,000€, which is enough for more than 20,000 plants:

- 64%: Perennials and grasses
- 35%: Shrubs and others
- 1%: Trees

Plant choice with examples

- Slopes: *Geranium macrorrhizum*, *Thymus serpyllum*
- Central reservation: *Hylotelephium* x *mottramianum* 'Herbstfreude', *Nepeta* x *faassenii*, *Teucrium* x *lucidrys*
- Under trees: *Brachyglottis monroi* , *Liriope muscari* 'Big Blue'
- Others: *Achillea crithmifolia*, '*Frankenia laevis*, *Hedera algeriensis* 'Bellecour, *Thymus nitens, Thymus ciliates, Thymus hirsutus* minus

Substrate

- 65% Topsoil (pH 5.5-6.2)
- 25% 2/6mm washed gravel, limestone-free
- 10% composted manure
- Substrate thickness on site: 5cm
- Plugs grown in substrate with added mycorrhizae

The plant choice and substrate were selected and improved in collaboration with Plantagenet Plantes. Using mainly perennials at a high density (10 plants/m^2) specially selected for the conditions and growing specifically selected growing media aids more resilient planting and providing good ground cover within three years then requiring less ongoing maintenance.

Continuous improvement approach

- Regular teams training:
  - About plants and their use
  - Principles of sustainable design and maintenance of flower beds
  - About soil
- Experimentation and feedback
  - New varieties and techniques
  - Feedback from experimentation

The Nature in the City plan

In 2021, the city of Angers adopted its "Nature in the City" 2021-2025 plan, aiming at combating urban warming, preserving tree heritage and developing biodiversity and urban agriculture (*Nature in the City Plan 2021-2025*, 2024).

Strategic objectives:

The following strategic objectives are based on the following references: OdysséeLab, 2024; *Shéma directeur des paysages 2019-2025*, 2019; Evain, 2024.

1: Strengthen the landscape identity of the City of Angers

- Speed up the urban greening projects and creating green infrastructure
- Planting in several layers in harmony with the natural landscape
- Integrate natural spaces into new developments using native plant species and historical plants of Anjou (rose, hydrangea, etc.)
- Use public green spaces to inspire and encourage the private sector to create more green spaces and improve planting

2: Sustainable design and management

- Increase biodiversity of flora and fauna in the city
    - Végétal Local: Use of wild plants, collected in the natural environment and sown to conserve the genetic biodiversity and restore the ecosystem in urban areas. Seeds are collected in 11 different biogeographic regions in France and applied accordingly (*Local plants, a tool for the biodiversity of our territories,* 2019).
- Adapt plant ranges to climate change
- Continuously improve design and management processes to support sustainable city development:
    - Decrease impermeable paved surfaces and replace them with new plantings where possible
    - Mitigation of urban heat island effects
    - Sustainable water management:
        - Reduce water usage (the aim is to only water in the first few months after planting)
        - Reuse grey water for irrigation (e.g. from swimming pools, ice skating rings)
        - Create bioswales: a landscape element designed to gather, infiltrate and purify stormwater runoff, while being beautiful and functional (Meristem Design, 2023)
- Aim for low maintenance
    - Maximise ground cover with high plant density -> 9-10 plants per m^2
    - Reduced use of mulch, only at the start of planting

Figure 11: Végétal Local logo *(Local plants, a tool for the biodiversity of our territories,* 2019)

3: Knowing, preserving and developing the tree heritage

- Update the city's GIS tree inventory regularly
- Annual phytosanitary and health & aesthetic condition surveys
- Biodiversity studies (flora and fauna)
- Identify and protect heritage trees
- Plant local indigenous trees, which are adapted to new conditions caused by climate change: Trees are planted with probes, which monitor accessible water from the soil to aid their good establishment.
- Fight against blocking the water channels down to the root zone

- Benefits:
    - improved biodiversity in urban or suburban locations
    - improved wellbeing and health of residents
    - engagement with wider environmental projects and issues
    - reduced flooding and improved air quality
    - contribution to CO_2 capture and reduction of urban heat islands
    - creates a more beautiful urban landscape
- Soil analysis and study the environment to choose suitable plants
- Find suitable plants for the condition by looking at local natural forests

4: Raise awareness, educate and enable community projects

- Involving residents in community gardening projects
- Raise environmental awareness, educating children, residents and council employees
- Continue edible developments - encouraging citizens to grow food and turning vacant land into community and allotment gardens.

5: Enhance, monitor and evaluate

- Measure and publicise impacts of actions and innovations

Since university I have been passionate about urban greening and its benefits, so seeing Angers's historical architectural beauty combined with the natural green areas was a truly inspirational experience.

Pèpiniere Lepage 'Val de Loire'

Figure 12: Glasshouse: roof and sides open completely to provide protection from the elements

The nursery moved 9 years ago from about 3km away to this new location. They produce over two million plants with over 2,500 varieties. 70-80% of plants are propagated inhouse, the rest purchased. There is no heated glasshouse, giving the nursery a financial advantage and making it more environmentally friendly. Plants are grown in 8-9cm pots in plastic crates for a maximum of one season, they are sold in wooden crates mainly to the landscape market, with the last shipment around end of May. The plastic crates used for growing the plants are then sterilised and reused in the nursery.

Figure 13: Plants grown in crates

Water is collected through porous concrete and recycled.
There are two reservoirs:

- one collecting runoff water from the site
- the other stores river water

There is one type of substrate used for all plants, a mixture of 20% peat + 20-25% wood fibre, the rest is composted bark. A layer of oakwood chip mulch is used on top: for water retention and weed suppression.

Domaine des Deux Moulins

Figure 14: Domaine des Deux Moulis

Figure 15: Expression du Chenin 2022

Founded in 1989 by winemaker Daniel Macault, Domaine des Deux Moulins is a 72-hectare vineyard located in the Loire Valley near Angers. Since the beginning, Daniel has been promoting sustainability. The estate stopped using chemicals in 2016 and two years later planted their first Agroforestry plot, interspersing southern grape varieties with fruit trees to fight the effects of climate change (*Domaine des Deux Moulins, Anjou Rouge*, 2018, 2024). The estate now produces organic wine using native, mildew and drought resistant varieties and use yeast produced in house where possible. This has reduced pesticide use to 1/5 of that used in the non-organic years. They also introduced a new watering regime, where they only water at and shortly after planting resulting in plants adapting more to dry conditions.

As part of their sustainable approach, they plan to use only transparent wine bottles, which can be 100% recycled unlike the darker ones. The aim is to reuse all bottles in the future, this can be achieved with different solutions, like selling to restaurants in crates, small wine shops and to individuals that come and consume the wine on site.

They are not only fine-tuning processes to achieve sustainable production but also reducing their environmental impact with local distribution, no more than 200km away from the vineyard, and promoting biodiversity by creating hedgerows.

Their commitment to reduce the impact of climate change is admirable.

INH University, Agrocampus-Ouest

Figure 16: INH University, Agrocampus-Oest

Figure 17: INH Uni study planting

The ISU Perennial trials were planted and evaluated in 18 different locations in the EU. The INH University Garden is one of these and home to 25 novelties from 21 different Genera, which were submitted by 6 suppliers (*ISU Information August 2024*, 2024). We had the opportunity to individually visit and pick our favourites as well as explore at the rest of the grounds. Walking around the Campus reminded me of my university years in MATE (Hungarian University of Agriculture and Life) bringing back great memories.

Four varieties were awarded (Figure 18-21).

Figure 18: *Phlox paniculata* 'Koningin Paola' bred by Jan Spruyt-Van der Jeugd

Figure 19: *Pycnanthemum flexuosum* JS® 'Carte Blanche' bred by Jan Spruyt-Van der Jeugd

Figure 20: *Perovskia atriplicifolia* 'Prime Time' by Plantipp BV.

Figure 21: *Euphorbia* MINER'S MERLOT ('Km-mm024') by Plantipp BV.

Domaine Chaumont-sur-Loire

Figure 22: Château de Chaumont-sur-Loire

Domaine Chaumont-sur-Loire is split into three primary areas:

- The Château and Historic Grounds
- Permanent World Gardens
- International Garden Festival.
  This competition selects a different theme each year. In 2024 it was: Life Source Garden. From about 300 proposals, only 25 gardens are selected and built each year. The gardens are based on a concept and executed in an artistic way. My favourite was 'The Garden of Whispers' (Figure 23). It concentrated on the importance of plants in urban environments and their ability to increase biodiversity.

Figure 23: 'The Garden of Whispers'

Figure 24: 'Pollinator City'

I did however find some gardens controversial, like the one called 'Pollinator City' (Figure 24). I understood the concept but did not think the planting was executed to invite and support pollinators. On the day of our visit there was hardly any flowers open, I felt the art elements overpowered the concept of providing a home and food for bees and other pollinators.

Barrault Nursery

Figure 25: Outdoor beds and reservoir

Figure 26: Tender plants under glass

Figure 27: Trimming machine

Barrault nursery, a family business with 160 employees, grows an impressive range of plants, more than 2000 types of perennials. The nursery has 33ha growing area, from which 4.5ha is under plastic and 6.5ha under glass. The site is split with a physical barrier into conventional and organic growing areas. 11 million pots are produced per year in total. The plants are grown in several sizes of pots up to 10L and use 24 different substrates. Cultural work is completed with the help of several different sowing, potting and trimming machines including some processes that are automated with the use of robotic arms. For weed prevention, a layer of mulch is used to cover the top of the compost and sterilised water is used to irrigate the plants.

There are seven water reservoirs, plants are grown on asphalt to enable water run-off collection, and an impressive 84% of the water can be recycled. In a drought, if necessary, water from the Loire can be used too.

Customers:

- 50% garden centres
- 20% city councils
- 30% to smaller companies, like nurseries, landscapers etc

99% are sold in France, only 1% abroad (in Europe).

Barrault nursery is committed to sustainability, which is visible from the:

- Recycled packaging, labels and pots
- Recycled water collection and usage
- Washing and reusing of plug trays.

Plantagenet Plantes Nursery

Figure 28: Natural areas at Plantagenet

Figure 29: *Echinaceae* in semi-extensive area at Plantagenet

Figure 30: Plantagenet house garden

Plantagenet Nursery was started by Bella and David Gordon in 1998 (Plantagenet Plantes, 2024), when they moved from London to this 3-hectare site in the South of the Loire Valley. With less than

600mm annual rainfall in this region and climate change causing hotter and longer summers, milder winters and changes in rainfall patterns, Bella and David have implemented a plant focused, sustainable gardening and design approach. This means minimal use of irrigation, natural soil improvement, mulch use, plant choices adapted to local growing conditions and minimal maintenance techniques (Gordon, 2024).

They produce perennials, grasses and small shrubs in 9cm, 1 and 2litre pots and specialise in growing drought resistant and chalk-tolerant varieties. 80% of the plant material is produced in house using peat free growing medium since 2016, which is a mix of coco-fibre, composted bark with the addition of endomycorrhiza and *Bacillus* to help root development and nutrient absorption. Irrigation is with the use of sub-irrigation (sand beds) and micro-sprinklers. Using wetting agents has also greatly reduced water consumption. Pests and diseases are treated naturally, when possible, with minimal chemical use to promote biodiversity and protect beneficial insects (Gordon, 2024).

Bella and David aim to select easy to grow and maintain perennials, more drought-resistant like: *Panicum virgatum*, *Hylotelephium, Frankenia laevis* and *Salvia nemorosa* varieties (Gordon, 2024).

My favourites are:

Figure 31: *Epilobium canum* 'Western Hills'

Figure 32: *Teuchrium ackermannii* hort.

Figure 33: Salvia lavandulifolia subsp. Blancoana

Figure 34: Lotus hirsutus

Plantagenet is not only a nursery but a garden design and creation service too, available for the public sector, professional gardeners, landscapers and private clients alike.

Their lovely garden, nursery and their work with Angers city council to design more sustainable green areas, is truly inspirational.

Domaine de la Paleine Vineyard

Figure 35: Grass cover between vine rows

Figure 36: Entrance to the cellars

Figure 37: Wine tasting at Domaine de la Paleine

The Domaine de la Paleine was established in the 18th century.

The stunning 38-hectare vineyard sits over a tuffeau rock base covered by a remarkable diversity of soils (*Domaine de la Paleine*, 2024). The vine is produced both traditionally in underground cellars in wooden barrels (Figure 38) and in stainless steel tanks in the farm building (Figure 39).

Figure 38: Wooden barrels at Domaine de la Paleine

Figure 39: Stainless steel tanks at Domaine de la Paleine

Over the past thirty years, the business has undergone radical improvement, refocusing on sustainable viticulture and quality. In 2023, Jean-Louis Bernet took over from Marc and Laurence Vincent and is now continuing this adventure (*Domaine de la Paleine*, 2024).

There is grass cover between the rows of vines, and weeding is done mechanically. This promotes healthy life and structure of the soil. Pruning is done according to the Guyot Poussard method; and the harvest is manual. Chenin and Cabernet Franc are the two flagship grape varieties, with the addition of a few others for fine sparkling wine (*Domaine de la Paleine*, 2024).

Conclusions and Future Plans

It was a great experience to meet the ISU members and visit several horticultural establishments in the Angers region. Their environmentally friendly practices with the focus on climate change were inspirational and motivational.

UK plant breeding is an industry that is shrinking, with few new breeders being trained. In the EU, plant breeding is much better resourced and there is investment in the latest molecular technology. For a plant breeder such as myself who is new to the industry it is important to network, share and exchange knowledge. This sort of exposure is vital to my training and this trip offered a unique opportunity to meet other plants people and breeders with whom I hope to make useful connections. On the ISU Summer Days I had the pleasure of meeting and chatting to well-known breeders like Dan Heims and Jan Spruyt and product managers like Justin Wisniewski. It was great to gain an insight to their work.

I also had the opportunity to meet other knowledgeable horticultural professionals from all over Europe and the US, who were all very friendly and we had interesting conversations about horticulture, business and family life.

During this trip I not only gained more contacts in the horticulture industry, but also a wider knowledge of horticultural establishments in the EU. In addition to the horticultural achievements, I enjoyed the walks in and around Angers and admired the contrast and harmony between urban and natural environments.

In the future, I'm planning to attend more trips and conferences arranged by the ISU and other organisations to broaden my horticultural knowledge and to make more contacts. I hope sharing my experiences will motivate other people to seek out these kinds of opportunities for self-development and encourage them to apply for the RHS Bursaries.

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